

REMARKS

Claims 1-9 are pending in the application. By this Amendment, Claims 1-9 are amended to remove reference numerals.

In the Office Action, the Examiner rejects Claims 1-5 under 35 U.S.C. § 102(b) over U.S. Patent No. 4,405,966 to Cavero (Cavero). The Examiner also rejects Claim 6 under 35 U.S.C. § 103(a) over Cavero. These rejections are respectfully traversed.

Cavero discloses a protection system that analyzes local measurements of voltage and current, and provides a distance protection function, for example Cavero's protection system detects a line fault that occurs far away from the point of measurement. See for example Cavero at column 4, lines 55-65. In Cavero, the terms "phase selector relay" and "distance protection relay" refer to functions for the detection of different types of lines faults. The components of both relay functions are implemented in the same device, as shown in Figure 2 of Cavero, with the list of function blocks associated with each relay function given in Tables 3 and 4. See Cavero at column 7, lines 55-63. The measured data mentioned in column 4, line 57 are the phase currents and voltages at a single location, not phasor data at a plurality of locations of the network.

In summary, Cavero describes a *single* device taking measurements at a *single* location in the network and determining a signal that indicates a *line fault*. Cavero fails to disclose or suggest a method for assessing the stability of an electric power transmission network, including measuring phasor data for voltages and currents *at a plurality of locations* of the network, *transmitting the phasor data to a system protection center*, transmitting information regarding the state of switches of at least one substation to the

system protection center, and the system protection center *determining at least one stability margin value of the transmission network from said phasor data and said information regarding the state of switches*, as recited in Claim 1. For example, Cavero fails to even mention network stability or power margins. Withdrawal of the rejection of Claims 1-5 under 35 U.S.C. § 102(b) over Cavero, and of the rejection of Claim 6 under 35 U.S.C. § 103(a) is respectfully requested.

In the Office Action, the Examiner rejects Claims 7-9 under 35 U.S.C. § 102(e) over U.S. Patent No. 6,415,244 to Dickens, *et al.* (Dickens). This rejection is respectfully traversed.


Dickens discloses a method for compressing measurements representing a waveform, and for extracting and representing power transmission disturbances. See for example Dickens at column 1, line 55 to column 2, line 25. Dickens discloses only the internal workings of a single device that takes measurements at a single location in a network. As with Cavero, Dickens fails to even mention network stability or power margins.

Accordingly, Dickens fails to disclose or suggest a system protection center for an electric power transmission network, including a data concentrator unit for storing phasor data from *a plurality of phasor measurement units that are distributed over the power transmission network* and for storing substation data from a plurality of substation automation systems and a system protection unit for generating *at least one stability margin value of the transmission network*. Withdrawal of the rejection of Claims 7-9 under 35 U.S.C. § 102(e) over Dickens is respectfully requested.

Applicants respectfully submit that the application is in condition for allowance.
Favorable consideration on the merits and prompt allowance are respectfully requested. In
the event any questions arise regarding this communication or the application in general,
the Examiner is invited to contact Applicants' undersigned representative at the telephone
number listed below.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: 
M. David Ream
Registration No. 35,333

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

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Attachment to Amendment dated 11 November 2002

Marked-up Claims 1-9

1. Method for assessing the stability of an electric power transmission network, where said network comprises a plurality of substations, buses and lines, and a system protection center [(8)], [characterised in that the method comprises the steps of] comprising:

a) measuring phasor [(9)] data for voltages and currents at a plurality of locations of the network,

b) transmitting said phasor data [(9)] to said system protection center [(8)],

c) transmitting information [(5)] regarding the state of switches of at least one substation to the system protection center [(8)], and

d) the system protection center [(8)] determining at least one stability margin value of the transmission network from said phasor data [(9)] and said information regarding the state of switches.

2. The method claimed in claim 1, [further] comprising: [the steps of]

a) the system protection center [(8)] determining one or more control commands [(6)],

b) the system protection center [(8)] transmitting said control commands [(6)] to the at least one substation, and

c) the substation executing said control command [(8)].

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3. The method claimed in claim 1, [further] comprising: [the steps of]
 - a) the system protection center [(8)] determining network state information [(11)],
 - b) the system protection center [(8)] transmitting said network state information [(11)] to an energy management system [(7)], and
 - c) the energy management system [(7)] controlling power generation and power flow within the network according to the network state information [(11)].
4. The method claimed in claim 1, characterised in that the phasor data [(9)] is measured at least every 100 milliseconds.
5. The method claimed in claim 1, characterised in that the phasor data [(9)] is associated with a time stamp that has a temporal resolution smaller than one millisecond.
6. The method claimed in claim 1, characterised in that the measurement of phasor data [(9)] is synchronised by timing information from the global positioning system.
7. A system protection center [(8)] for an electric power transmission network comprises a data concentrator unit for storing phasor data [(9)] from a plurality of phasor measurement units [(10)] that are distributed over the power transmission network and for storing substation data [(5)] from a plurality of substation automation systems [(2)] and a

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system protection unit for generating at least one stability margin value of the transmission network.

8. The system protection center [(8)] as claimed in claim 7, [characterised in that it comprises] comprising an automated control unit for generating control commands [(6)] for a substation automation system [(2)] from the at least one stability margin value and from data provided by the data concentrator unit.

9. The system protection center [(8)] as claimed in claim 7, [characterised in that it comprises] comprising means for transmitting network state information [(11)] to an energy management system [(7)] of the transmission network.